REMARKS

The Examiner's attention to the present application is noted with appreciation.

In paragraphs 1 and 2 of the Office Action dated May 13, 2004, the Examiner rejected claims 1 through 5 under 35 U.S.C. § 102(b) as being anticipated by Stephens (U.S. Patent Nos. 5,341,639 or 5,611,824). The rejection is traversed as to the claims as amended.

Claim 1 has been amended to better describe Applicant's invention as relating to nanotubes. Referenced patents 5,341,639 and 5,611,824 differ and teach away from Applicant's invention. Stephens discloses exclusively the spherical fullerene molecule and depends on the capability of fullerenes to quickly volatilize (sublime) and become combustion products in his rocket engines. The capacity of fullerenes to sublime (go directly from solid to gas) is a well documented physical property of the material. Nanotubes have quite different physical properties. They do not sublime and in fact are stable to exceedingly high temperatures.

The high-temperature stability of nanotubes is divergent from the lack of high temperature stability of fullerenes. Furthermore this stability remains after the process of adding different functionalities to the nanotube (e.g., nitro addition). Once the nitro functionality explodes and/or reacts the structure of the nanotube is vastly compromised, but nanotube fragments will still remain in the form of carbon soot. Fullerenes on the other hand sublime at relatively low temperatures and are not currently thought of as being structural material except perhaps on the sub-microscope or even atomistic level due to their ability to store smaller molecules inside their 60 atom cage.

Nanotubes can also form structural building blocks. Since nanotubes can be formed into fibers, fabrics, sheets, and surfaces, while fullerenes cannot, the inventions are fundamentally different. This structure-forming capability continues after chemical modification. Stephens, on the other hand, makes no such assertion with his patent because fullerenes do not and cannot be formed, by themselves, into such rich and varied structural materials. Accordingly, claim 1 is patentable over Stephens.

Claims 2 through 5, which have been amended to better describe the invention as relating to nanotubes, are dependent on claim 1, which is patentable. Therefore, claims 2 through 5 are also patentable over Stephens.

In paragraph 3 of the Office Action, the Examiner rejected claims 6 through 24 under 35 U.S.C. § 103(a) as being unpatentable over Stephens (U.S. Patent Nos. 5,341,639 or 5,611,824) as applied to claims 1 through 5 above. The rejection is traversed, particularly as to the claims as amended. The Examiner correctly notes that Stephens does not disclose the use of the derivatives with other explosives devices or the nitration of nanotubes or buckypaper. As described above, unlike fullerenes, nanotubes have vast structural strength. Modeling predictions suggest that single walled nanotubes can be made into materials that have specific strengths and specific moduli that are several orders of magnitude greater than existing materials. Applicant's invention is not disclosed or suggested by any of the Stephens references, and in fact, Stephens teaches away from the present invention. Accordingly independent claims 1 and 13 are patentable over Stephens.

Claims 6 through 12 and 14, 15, and 17 through 24, which have been amended to better describe Applicant's invention as relating to nanotubes, are dependent on claims 1 and 13 respectively. Therefore, claims 6 through 12 and 14 through 24 are also patentable. Claims 4 and 16 have been canceled.

In view of the above amendments and remarks, it is respectfully submitted that all grounds of rejection and objection have been avoided and/or traversed. It is believed that the case is now in condition for allowance and same is respectfully requested.

If any issues remain, or if the Examiner believes that prosecution of this application might be expedited by discussion of the issues, the Examiner is cordially invited to telephone the undersigned attorney for Applicant at the telephone number listed below.

Respectfully submitted,

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